NORTH CAROLINA
Department of Transportation









Division 3

Alternative Selection Process and Lessons Learned

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November 6, 2018

Overview

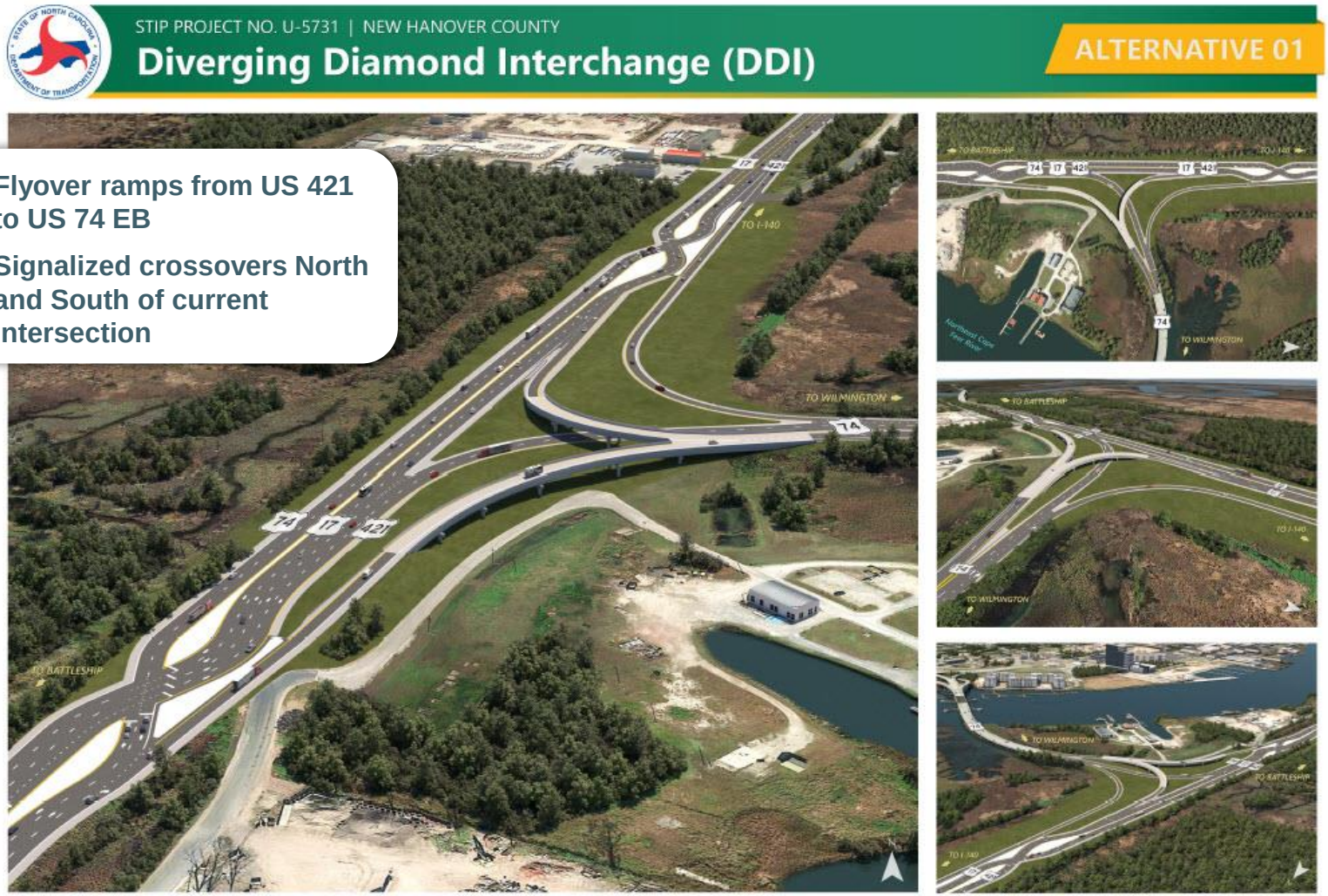
- Factors used when selecting alternatives
- Project Examples
  - US 74 at US 17 / US 421 Flyover
  - College Road and Oleander Drive Interchange
- Public Meetings
- Selection Steps
- Alternative Selection Lessons Learned
- Q & A

Factors Used When Selecting Alternatives

- Purpose and Need
- Environmental Impacts – Wetland & Streams, Avoidance Minimization
- Property Impacts - Relocations
- Traffic Data – Traffic Capacity Analysis (LOS & Delay)
  - Travel Times or LOS of Roadway Segment
- Local Agency and Public Input
- Benefits vs Cost
- Growth/New Development within the project limits
- Constructability

US 74 at US 421 Flyover (Isabel Holmes Bridge)

Alternative 1 - Diverging Diamond Interchange (DDI)

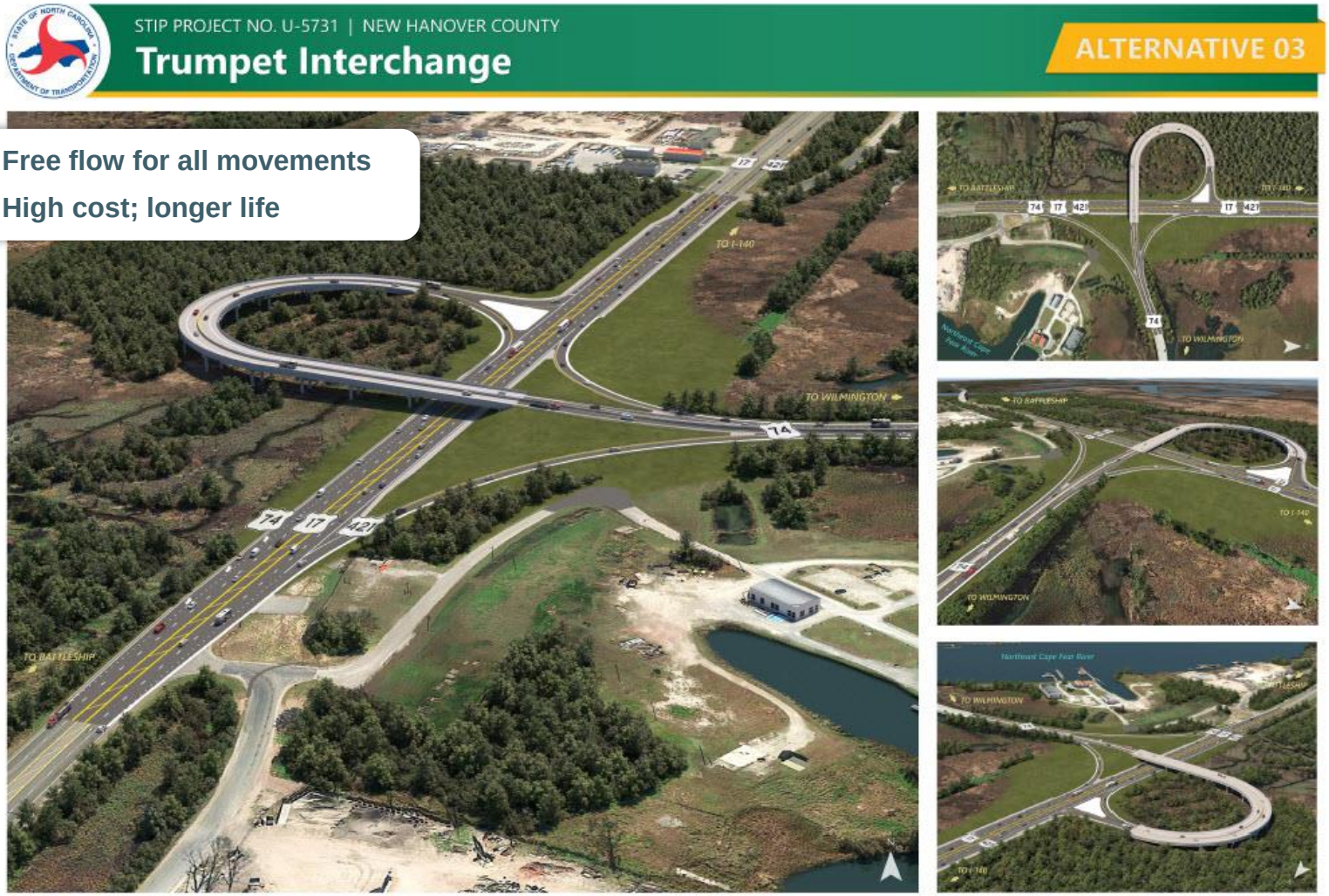


US 74 at US 421 Flyover (Isabel Holmes Bridge)

Alternative 2 - Flyover Interchange

US 74 at US 421 Flyover (Isabel Holmes Bridge)

Alternative 3 - Trumpet Interchange



STIP Project U-5731 - Study Alternatives (Rev 8/7/2018)					
Feature		*Alt 1*	*Alt 2*	*Alt 3*	*Notes*
Design Type		DDI	Flyover	Trumpet	
Length (miles)		0.89	0.51	0.45	
Traffic	Level of Service (Intersections)	D	C	N/A	
	Level of Service (Segments)	See attached	See attached	See attached	
	Free Flow Movements	None	WB Left	All movements	
	Signals Required	2	1	0	
Wetland Impacts - 404 (Acres)		1.98	2.00	1.44	10' offset from slopestakes; does not include bridge impacts
Wetland Impacts - CAMA (Acres)		2.29	0.49	0.53	10' offset from slopestakes; does not include bridge impacts
Delineated Stream Impacts (Linear Feet)		0	0	0	10' offset from slopestakes; does not include bridge impacts
Delineated Pond Impacts (Acres)		0	0	0	10' offset from slopestakes; does not include bridge impacts
Displacements	Residential (No.)	0	0	0	
	Business (No.)	4	0	4	Alt 2: Impact to access; Alt 3: relocations include Scotchman Truckstop, Reds Restaurant, Subway Restaurant, Landlord
	Non-profit (No.)	0	0	0	
Federal/State Threatened Endangered Species Habitat Present		Yes	Yes	Yes	Northern Long-Eared Bat: MA-LAA
Natural Heritage Program SNHA, Managed Areas (Acres)		0.34	2.98	2.21	Brunswick River/Cape Fear River Marshes, North Caroline Coastal Land Trust Easement Assumes no permanent impact inside of bridges
Prime Farmlands/Farmlands of Statewide Importance (Acres)		0	0	0	
Forest (Acres)		0	0	0	
100 Year Floodplain and Floodway Impacts (Acres)		16.89	10.79	10.64	
Historic Properties/Impacts		No Effect	No Effect	No Effect	Meeting with HPO; Alt 2 and 3 are outside historic district
Noise Receptor Impacts (No.)		N/A	N/A	N/A	
Recorded Archaeological Sites/Impacts		0	0	0	Letter from EAU-Archaeology; no sites found
Wildlife Refuge /Gamelands (Acres)		0	0	0	
Recreational Areas/Parks (Acres)		0	0	0	
High Quality Waters (HQW, ORW, WS Protected or Critical Areas) (Acres)		0	0	0	
Public Water Supply Wells (100' Buffer) (No.)		1	1	1	Same quadrant as Scotchman Truckstop
Cemeteries (No.)		0	0	0	
Churches (No.)		0	0	0	
Potential UST/Hazmat Sites (No.)		1	1	1	Scotchman Truckstop
Construction Cost		$17,000,000	$10,500,000	$22,600,000	STIP Cost: $30,000,000
Utilities Cost		$238,500	$179,500	$183,200	STIP Cost: $1,000,000
Right-of-Way Cost		$5,425,000	$2,154,000	$5,008,500	STIP Cost: $5,000,000
Total Cost		$22,663,500	$12,833,500	$27,791,700	TOTAL STIP COST: $36,000,000

US 74 at US 421 Flyover (Isabel Holmes Bridge)

Lessons Learned

- Have the PEF and/or project development team plan the direction they want the alternative selection meeting to go and guide the discussion towards a recommended alternate.
- Have a prepared Agenda for the meeting.
- Welcome comments and discussion for concerns and revisions or disapproval…but keep the meeting moving forward.

College Road and Oleander Drive
Alternate A – Quadrant Design

Removes left-turns from main intersection. Left-turns redirected to Parkway Drive.

Improves capacity with three thru lanes in NB/SB direction.

Low cost

College Road and Oleander Drive
Alternate B – Continuous Flow Intersection

- Displaces left-turns for concurrent movements at signals
- High property impacts

College Road and Oleander Drive
Alternate C – Tight Urban Diamond Interchange

College Road over Oleander Drive; Access controlled

High property impacts

High cost

U-5704 (College/Oleander) - Impacts Matrix

Study Alternatives			U-5704
Environmental Impacts	**Alt A (Quadrant Intersection)**	**Alt B (Cont. Flow Intersection)**	**Alt C (Tight Diamond)**
FEATURE			
Length (miles)	0.80 (miles)	0.97 (miles)	1.10 (miles)
Travel Time (AM/PM)*	3.54 min/3.63 min	2.84 min/3.26 min	3.88 min/2.99 min
Level of Service (AM/PM)	D/C	C/C	B/C
Delineated Wetland Impacts (acres)	0	0	0
Delineated Stream Impacts (linear feet)	0	0	0
Delineated Pond Impacts (acres)	0	0	0
Property Impacts			
Residential Properties	6	0	0
Business Properties	12	21	28
Non-profit Properties	2- Church	2- Church	2- Church
Federal/State Threatened Endangered Species Habitat Present	0	0	0
Natural Heritage Program SNHA, Managed Areas and Wetland Mitigations Sites (acres)	1 (Hugh MacRae Park) 0.257 *(acres)*	1 (Hugh MacRae Park) 0.114 *(acres)*	1 (Hugh MacRae Park) 0.614 *(acres)*
Prime Farmlands/Farmlands of Statewide Importance (acres)	0	0	0
Forest (acres)	0	0	0
100 Year Floodplain and Floodway Impacts (acres)	0	0	0
Historic Properties (no.)	0	0	0
Noise Receptor Impacts	TBD	TBD	TBD
Recorded Archaeological Sites (no.)	TBD	TBD	TBD
Wildlife Refuge /Gamelands (acres)	0	0	0
High Quality Waters (HQW, ORW, WS Protected or Critical Areas) (acres)	0	0	0
Public Water Supply Wells (100' Buffer) (no.)	0	0	0
Cemeteries (no.)	0	0	0
Potential UST/Hazmat Sites (no.) (GIS)	Underground Storage Tanks - 0 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 PreRegulatory Landfills - 0	Underground Storage Tanks - 1 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 PreRegulatory Landfills - 0	Underground Storage Tanks - 2 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 PreRegulatory Landfills - 0
Total Construction Cost	**$18,443,044**	**$19,596,962**	**$32,714,125**
Total Right-of-Way Cost	**$18,200,000**	**$27,000,000**	**$37,300,000**

College Road and Oleander Drive Intersection Improvements
Alternative A Preferred – Quadrant Design

- Least Commercial Impacts
- Lower Construction and Right of Way cost
- Level of Service Acceptable
- Less impacts during construction

Lessons Learned

- Ensure PEF is conducting internal QA/QC. Don't hesitate to question the data if it doesn't make sense!
- Be prepared for last minute data/information which may affect the alternative selection.

Public Meeting Lessons Learned

- Handouts with project information
- Multiple stations (Wall stations, table stations)
- Public Hearing Maps with anticipated impacts
- Alternative concepts drawings, if applicable
- Visualizations – Videos, Renderings and/or Photos

- Pre-meeting with NCDOT staff
- Have ROW staff present at public meetings
- Have enough staff present / know expected audience
- Have separate public meetings for private and business properties, if needed

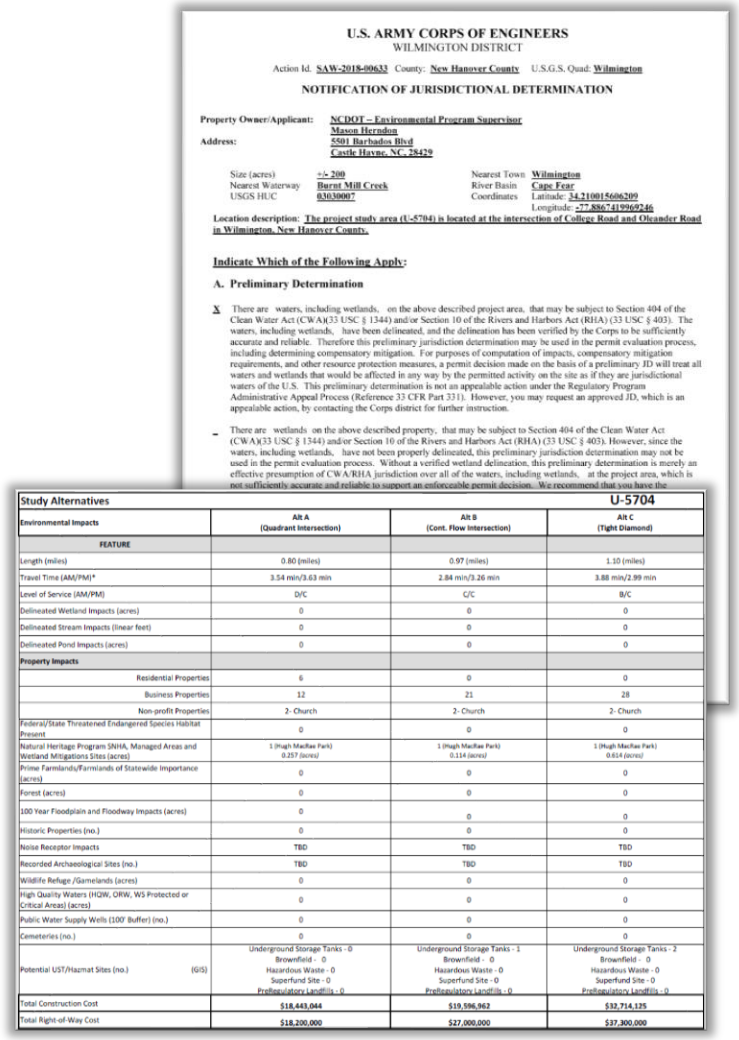
Selection Steps

1. Internal Division meeting to discuss alternatives, the alternative impact matrix, traffic information, community input, and project specific elements that may affect project selection. Include MPO/RPO's feedback and opinions for this internal meeting, if applicable. Alternatives are narrowed to two or three to present at the public meeting.
2. Division identifies preferred alternative with assistance from design firm.
    1. Go into the Preferred Alternative Selection meeting with an agenda.
    2. Key personnel need to attend (Traffic, Environmental, Construction, MPO/RPO, etc.).
    3. Go into the meeting with a staff preferred alternative selected.
3. Division receives support from MPO or RPO in the form of a formal resolution, if applicable.
4. Division receives support from the local municipality in the form of a formal resolution, if applicable.

Alternative Selection Lessons Learned

Pre-Preferred Alternative Selection Meeting

- Understand the Purpose and Need statement!
- Have the MPO/RPO involved from the beginning of the project (Scoping) and throughout the selection process.
- Have PEF complete the Alternative Matrix as early as possible, Division Environmental Unit needs to review.
- Have the final PJD complete before selection begins.
- Have all needed data BEFORE the public meeting or dropping an alternative.
- Validate design decisions or information provided.



U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. SAW-2018-00633 County: New Hanover County U.S.G.S. Quad: Wilmington

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Applicant: NCDOT – Environmental Program Supervisor
Address: Mason Herndon
5501 Barbados Blvd
Castle Hayne, NC 28429

Size (acres) +/- 200 Nearest Town Wilmington
Nearest Waterway Burnt Mill Creek River Basin Cape Fear
USGS HUC 03030007 Coordinates Latitude: 34.210015606209
Longitude: -77.886741996924 6

Location description: The project study area (U-5704) is located at the intersection of College Road and Oleander Road in Wilmington, New Hanover County.

Indicate Which of the Following Apply:

A. Preliminary Determination

X There are waters, including wetlands, on the above described project area, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). The waters, including wetlands, have been delineated, and the delineation has been verified by the Corps to be sufficiently accurate and reliable. Therefore this preliminary jurisdiction determination may be used in the permit evaluation process, including determining compensatory mitigation. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction.

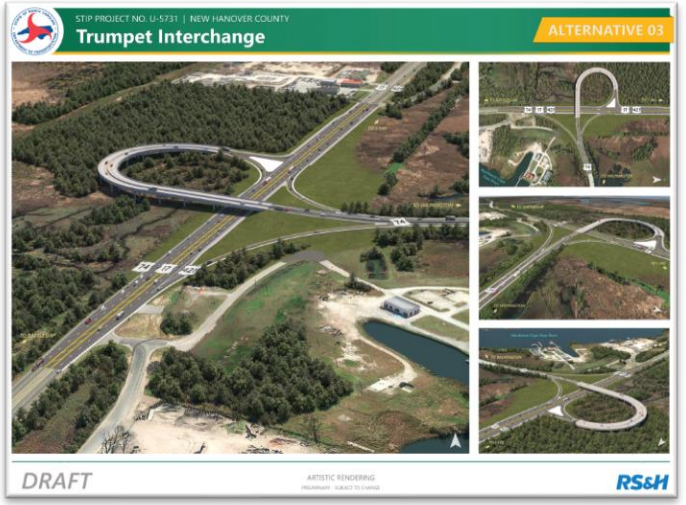
– There are wetlands on the above described property, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). However, since the waters, including wetlands, have not been properly delineated, this preliminary jurisdiction determination may not be used in the permit evaluation process. Without a verified wetland delineation, this preliminary determination is merely an effective presumption of CWA/RHA jurisdiction over all of the waters, including wetlands, at the project area, which is not sufficiently accurate and reliable to support an enforceable permit decision. We recommend that you have the

Study Alternatives			U-5704
Environmental Impacts	Alt A (Quadrant Intersection)	Alt B (Cont. Flow Intersection)	Alt C (Tight Diamond)
FEATURE			
Length (miles)	0.80 (miles)	0.97 (miles)	1.10 (miles)
Travel Time (AM/PM)*	3.54 min/3.63 min	2.84 min/3.26 min	3.88 min/2.99 min
Level of Service (AM/PM)	D/C	C/C	B/C
Delineated Wetland Impacts (acres)	0	0	0
Delineated Stream Impacts (linear feet)	0	0	0
Delineated Pond Impacts (acres)	0	0	0
Property Impacts			
Residential Properties	6	0	0
Business Properties	12	21	28
Non-profit Properties	2- Church	2- Church	2- Church
Federal/State Threatened Endangered Species Habitat Present	0	0	0
Natural Heritage Program SNHA, Managed Areas and Wetland Mitigations Sites (acres)	1 (Hugh MacRae Park) 0.257 (acres)	1 (Hugh MacRae Park) 0.114 (acres)	1 (Hugh MacRae Park) 0.614 (acres)
Prime Farmlands/Farmlands of Statewide Importance (acres)	0	0	0
Forest (acres)	0	0	0
100 Year Floodplain and Floodway Impacts (acres)	0	0	0
Historic Properties (no.)	0	0	0
Noise Receptor Impacts	TBD	TBD	TBD
Recorded Archaeological Sites (no.)	TBD	TBD	TBD
Wildlife Refuge /Gamelands (acres)	0	0	0
High Quality Waters (HQW, ORW, WS Protected or Critical Areas) (acres)	0	0	0
Public Water Supply Wells (100' Buffer) (no.)	0	0	0
Cemeteries (no.)	0	0	0
Potential UST/Hazmat Sites (no.) (GIS)	Underground Storage Tanks - 0 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 Preliegulatory Landfills - 0	Underground Storage Tanks - 1 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 Preliegulatory Landfills - 0	Underground Storage Tanks - 2 Brownfield - 0 Hazardous Waste - 0 Superfund Site - 0 Preliegulatory Landfills - 0
Total Construction Cost	$18,443,044	$19,596,962	$32,714,125
Total Right-of-Way Cost	$18,200,000	$27,000,000	$37,300,000

Alternative Selection Lessons Learned

Preferred Alternative Selection Meeting

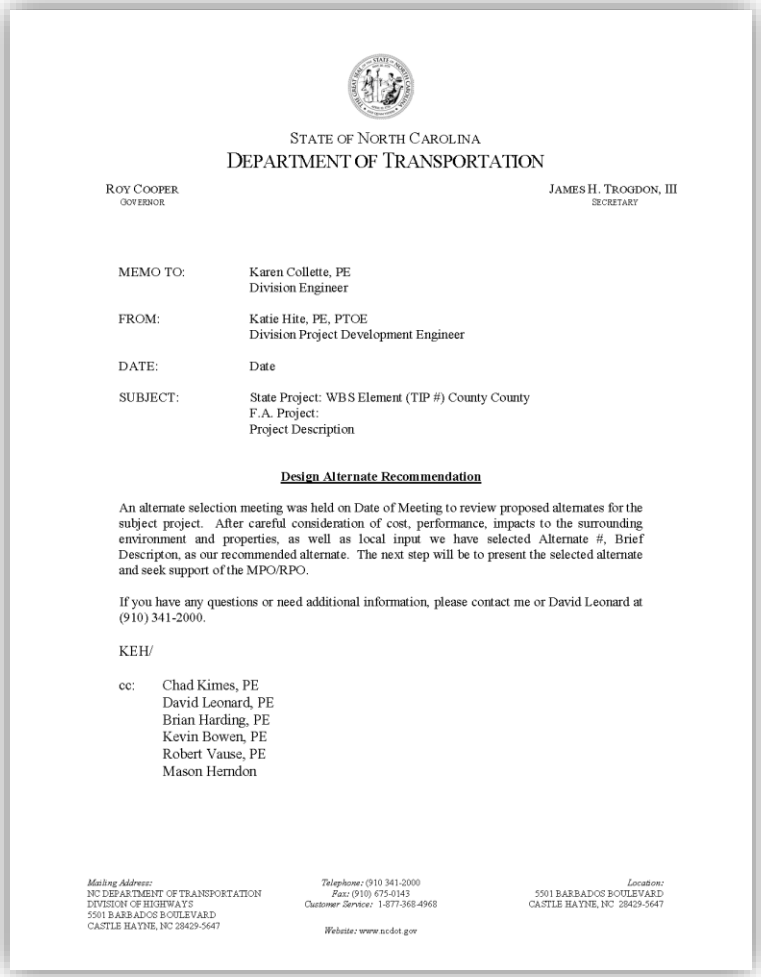
- Prior to the selection meeting have a meeting with project team to discuss the alternatives, matrix, traffic, public comments, approved PJD and other project specific information. This meeting is intended to discuss a possible preferred alternative and prepare for the Preferred Alternative Selection meeting.
- Have an agenda prepared for the Preferred Alternative Selection Meeting. Have PEF take and prepare meeting minutes.
- Welcome comments and discussion for concerns and revisions or disapproval but keep the meeting moving forward.



Alternative Selection Lessons Learned

Post-Preferred Alternative Selection Meeting

- Provide meeting minutes or summary.
- Design Alternative Recommendation Letter. This letter is internal to key Division personnel.
  - Division Engineer
  - Deputy Division Engineer
  - Division Construction Engineer
  - Division Maintenance Engineer
  - Division Environmental Officer
  - Division Project Development Engineer
  - Division Project Design Team Lead
- Coordinate closely with MPO/RPO to get resolutions from MPO/RPO and/or Council for preferred alternative.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

MEMO TO: Karen Collette, PE
Division Engineer

FROM: Katie Hite, PE, PTOE
Division Project Development Engineer

DATE: Date

SUBJECT: State Project: WBS Element (TIP #) County County
F.A. Project:
Project Description

Design Alternate Recommendation

An alternate selection meeting was held on Date of Meeting to review proposed alternates for the subject project. After careful consideration of cost, performance, impacts to the surrounding environment and properties, as well as local input we have selected Alternate #, Brief Descripton, as our recommended alternate. The next step will be to present the selected alternate and seek support of the MPO/RPO.

If you have any questions or need additional information, please contact me or David Leonard at (910) 341-2000.

KEH/

cc: Chad Kimes, PE
David Leonard, PE
Brian Harding, PE
Kevin Bowen, PE
Robert Vause, PE
Mason Herndon

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5501 BARBADOS BOULEVARD
CASTLE HAYNE, NC 28429-5647

Telephone: (910 341-2000
Fax: (910) 675-0143
Customer Service: 1-877-368-4968

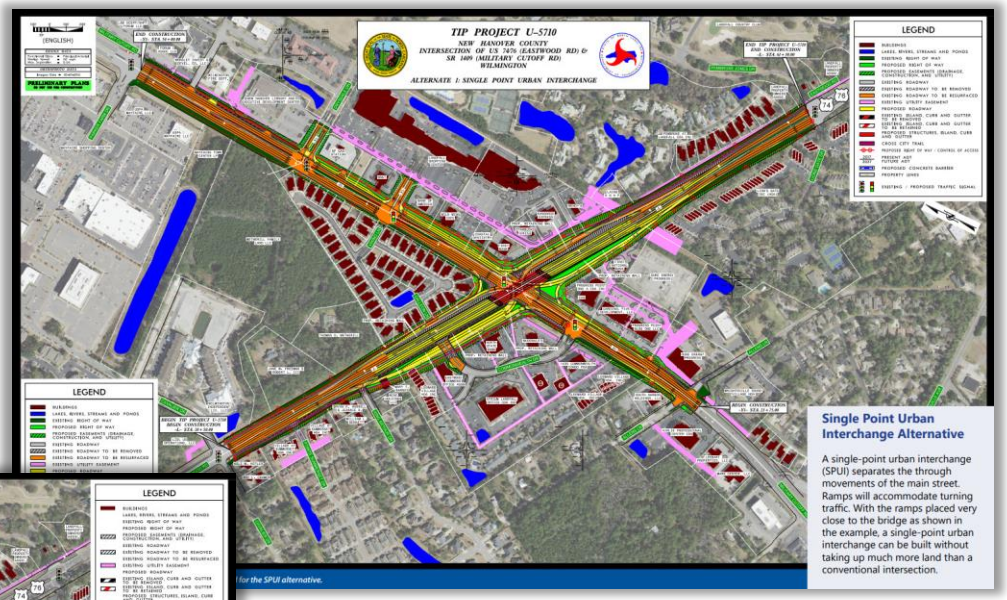
Website: www.ncdot.gov

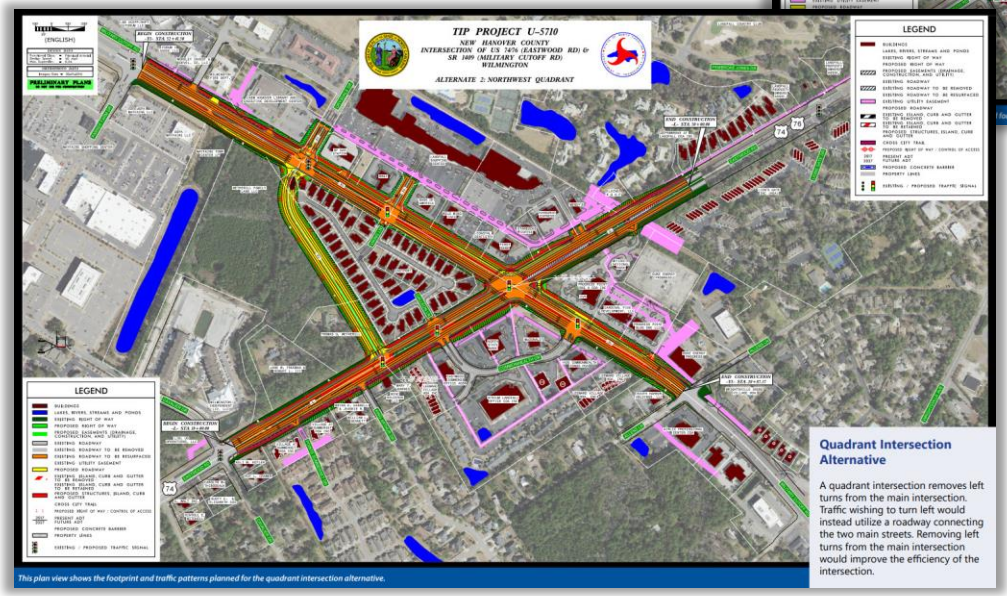
Location:
5501 BARBADOS BOULEVARD
CASTLE HAYNE, NC 28429-5647

Questions?

Military Cutoff and Eastwood Road Interchange

(Public Meeting 1)
Alt 1 – SPUI





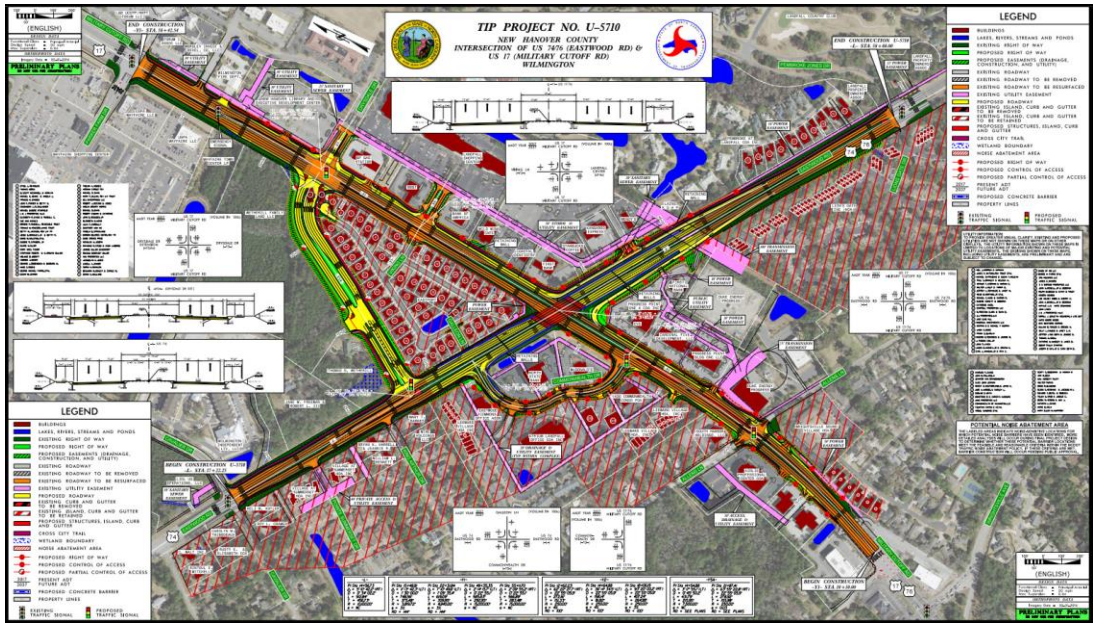
(Public Meeting 1)
Alt 2 – Quadrant

Military Cutoff and Eastwood Road Interchange

(Public Meeting 2)
Hybrid Alternative –
Grade Separated NW Quadrant

Lessons Learned

- Understand the purpose and need statement.
- Have alternative matrix information complete and available for review.
- Don't be afraid to modify the design and take back to the public for further comment.
- Consider separate meetings for business and private interests.



Video - Continuous Flow Intersection
https://www.youtube.com/watch?v=7mjOPvsJyCs